

**BID SPECS FOR FIRE HOSE:**

**Five-inch supply hose:**

The hose shall be double jacket with a minimum service test pressure of 300 psi / 2070 kpa.

**Jackets:** The inner hose jacket shall have 100% filament polyester warp and weft yarn. The outer jacket shall be made with virgin spun polyester warp yarn and a minimum of 11.3 filament polyester weft yarn picks per inch (445 per Meter). The outer jacket shall be impregnated in one of the standard NFPA colors with high performance polymeric dispersion.

**Lining:** The lining (waterway) must be made from polyurethane and must be applied using a fused process that welds the polyurethane directly to the textile while the hose is being woven, without the use of adhesives or hot melt. The fused lining process must create a virtually inseparable unit without the use of adhesives, yielding an extremely low friction (pressure) loss by filling in the corrugations of the weave, creating an ultra thin and smooth waterway. Fire hose made using adhesives of any type do not meet this specification. The lining shall be approved for use with potable water.

**Adhesion:** The adhesion shall be such that the rate of separation of a 1 1/2" / 38mm strip of polyurethane, transversely cut, shall not be greater than 1/4" / 6mm per minute under a weight of 12 lbs / 5.5 kg.

**Cold Temperature Flexibility:** The hose must remain flexible to -65°F (-55°C).

**Service, Test, Burst Pressures:** Minimum service, test and burst pressures shall be as detailed in the specification table on the previous page.

**Coupling Specifications**

The coupling shall have the country of origin legibly marked on the outside surface as required in NFPA 1963. Five-inch Storz couplings are specified, hose must have a coupling that features "lock protector" technology.

**Manufacture:** Both hose and couplings must be manufactured in North America and be NAFTA compliant.

**Warranty:** The fire hose shall have a "Two Year All Hazards Warranty"

**Firefighting Hose with the following diameters: 3-inch, 2.5-inch, 2-inch, and 1.75-inch**

The hose shall be double jacket with a service test pressure of 400 PSI / 2750 KPA.

Jackets: Both inner and outer jackets shall be made with spun polyester yarns.

The outer jacket shall be made with virgin spun polyester warp yarn and a filament polyester weft yarn. Hose made using nylon or other materials shall not be considered as meeting this specification. The outer jacket shall have a minimum of 10 filament polyester weft yarn picks per inch (394 per Meter) and when requested shall be impregnated in one of the standard NFPA colors with high performance polymeric dispersion.

Lining: The lining (waterway) must be made from polyurethane and must be applied using a fused process that welds the polyurethane directly to the textile while the hose is being woven, without the use of adhesives or hot melt. The fused lining process must create a virtually inseparable unit without the use of adhesives, yielding an extremely low friction (pressure) loss by filling in the corrugations of the weave, creating an ultra thin and smooth waterway. Fire hose made using adhesives of any type do not meet this specification. The lining shall be approved for use with potable water.

Adhesion: The adhesion shall be such that the rate of separation of a 1 1/2" / 38mm strip of polyurethane, transversely cut, shall not be greater than 1/4" / 6mm per minute under a weight of 12lbs/5.5kg.

Cold Temperature Flexibility: The hose must remain flexible to -40°F (-40°C).

Flow And Friction Loss: 1 3/4 inch (44mm) diameter, 100 US GPM (379 LPM), shall not exceed 10.0 PSI (69 KPa) loss per 100 feet (30.5 M).

Service, Test, Burst Pressures: Minimum service, test and burst pressures shall be as detailed in the specification table on the previous page.

Kink Test: A full length will withstand a hydrostatic pressure of 600 psi / 4140 kPa while kinked.

Coupling Specifications: Couplings shall be in conformance with the current NFPA standard and made of extruded aluminum, hard coated a minimum of .002" thick. They shall be manufactured in North America and permanently labeled with country of origin. They shall be expansion ring type.

Thread: National Standard,

Size: 3-inch and 2.5-inch shall have 2.5 NST couplings

2-inch and 1.75-inch shall have 1.5-inch NST couplings

Manufacture: Both hose and couplings must be manufactured in North America and be NAFTA compliant.

## **BID SPECS FOR RESCUE TOOLS:**

### **Electric-over-hydraulic: Cutter**

1. The tool is designed to be a hydraulically operated piston activating mechanical joints symmetrically to open or close a set of two opposite blade arms whereby cutting surfaces go on top of each other without making contact thus enabling objects to be cut.
2. Devices do not need to be connected to an external hydraulic source, generation of the required hydraulic pressure takes place within the body of the device by either a quick exchange lithium/ion battery or an external power supply.
3. The tool is equipped with light-emitting diodes attached on the operating side to facilitate work under poor lighting conditions.
4. The cylinder of the tool shall be made of anti-corrosive light aluminum alloy for its lightweight, strength and long life. The body of the tool shall have a high impact, non-metallic housing. The housing shall have ventilation holes on both sides of the unit for cooling the motor.
5. The maximum cutter opening at the tips will be 7.28 in (185 mm)
6. The cutter will be of slightly curved blade geometry for pulling the debris away and to the center with intelligent cutter geometry reducing tool movement and providing maximum cutting performance.
7. The blades shall be made of investment cast dropped-forged steel which has a glass-pearl blasted finish and are regrind-able. The blades of the tool should be attached to the piston rod via removable links for ease of repair, efficient power transmission and smooth operation. The pivot points of the blades shall have a rubber boot hand guard for safety purposes.
8. The engineered curved blades with sophisticated geometry close at the tips and then pull the object to be cut towards the point where the maximum cutting force is applied to the relevant working range providing superior cutting performance and significantly reducing cutter wear.
9. The cutting performance of the tool shall be able to cut up to 1.50 in (38 mm) diameter round stock steel.
10. The tool shall have a dual pilot check valve to prevent accidental movement of the blades in the event of power loss.
11. The control mechanism shall feature a star-grip control actuator for ease of operation by allowing 360° operations in any position. The mechanism shall be separate and independent from the handle to provide added control in close-quarter operation.
12. The tool must provide a non-interflow shear seal "dead man" actuator, whereby the unit stops functioning when thumb pressure is released.
13. The opening and closing positions are clearly marked.
14. The tool shall be protected by a pressure relief valve that prevents it from being over pressurized.
15. The tool dimensions without the battery shall not be any longer than 36.41 (925 mm), wider than 11.81 in (300mm) or higher than 11.42 in (290 mm).
16. The maximum operating pressure to the tool will be 10,200 psi (70 MPa) (700 bar).
17. The nominal electrical voltage (with power supply) is 24 V. The nominal electrical voltage (with lithium/ion battery) is 25.2 V.
18. The tool shall be able to tolerate an ambient temperature range of -4°F (-20°C) up to +131°F (+55°C).
19. The tool must be NFPA 1936; 2010 Edition certified and shall be labelled as such bearing the mark of the testing agency.
20. Cutting classification A8/B9/C8/D9/E9.
21. The tool will not weigh more than 53 lbs (24.1 kg) without the battery or cable plug.

## Electric-over-hydraulic: Spreader

1. The tool is a designed hydraulically activated piston with two equal, opposite light metal alloy spreader arms that are symmetrically opened by mechanical joints, thereby spreading objects. Closing the spreader arms is also carried out hydraulically and mechanically by reverse order of the piston.
2. Devices do not need to be connected to an external hydraulic source, generation of the required hydraulic pressure takes place within the body of the device by either a quick exchange lithium/ion battery or an external power supply.
3. The tool is equipped with lights to facilitate work under poor lighting conditions.
4. The cylinder of the tool shall be made of anti-corrosive light aluminum alloy for its lightweight, strength and long life. The body of the tool shall have a high impact, non-metallic housing. The housing shall have ventilation holes on both sides of the unit for cooling the motor.
5. The spreading force shall be up to 25,000 lbf.
6. The tool shall produce a maximum spreading distance of 23.8 in (605 mm).
7. The tool shall produce a maximum spreading force of 9,442 lbf (42 kN) and a minimum spreading force of 7,644 lbf (34 kN) measured 0.98 in. (25mm) from the tips. According to NFPA testing standards the HSF test point produced 8,993 lbf (40 kN), the LSF test point produced 7,419 lbf (33 kN).
8. To maximize the capability of the spreader the unit should include an optional chain and shackle package for pulling operations, use only HURST chain set KSV 11. This should not require the removal of the tips for attachment. The tool shall produce a maximum pulling force of up to 6,295 lbf (28 kN) and a minimum pulling force 5,058 lbf (22.5 kN) measured at the shackle holes. According to NFPA testing standards the HPF test point produced 5,171 lbf (23 kN), the LPF test point produced 4,272 lbf (19 kN).
9. The tool shall produce a pulling distance of 21.02 in (536 mm).
10. The tips are patented multifunctional tips that can be used for spreading, peeling, squeezing and pulling without the need to be changed. The tips are to be serrated and made from investment cast heat-treated steel.
11. The arms of the tool should be made of aluminum alloy and attach via removable links for ease of repair, efficient power transmission and smooth operation. The pivot points of the arms shall have a rubber boot hand guard for safety purposes.
12. The control mechanism shall feature a star-grip control actuator for ease of operation by allowing 360° operations in any position. The tool must provide a non-interflow shear seal "dead man" actuator, whereby the unit stops functioning when thumb pressure is released. The star grip automatically returns to the central position, guaranteeing the full load-holding.
13. The tool shall have two handles. One located at the center of the tool and the other located below the control mechanism. The center crossbar handle allows easy ergonomic manipulation from the center or either side.
14. The tool will be equipped with a dual pilot check valve. This is to prevent accidental movement of the arms in the event of power loss.
15. The tool shall be protected by a pressure relief valve that prevents it from being over pressurized.
16. The tool dimensions without the battery shall not be any longer than 35.24 (895mm), wider than 13.98 in (355 mm) or higher than 11.42 in (290 mm).
17. The maximum operating pressure to the tool will be 10,200 psi (70 MPa) (700 bar).

18. The nominal electrical voltage (with power supply) is 24 V. The nominal electrical voltage (with lithium/ion battery) is 25.2 V.
19. The tool shall be able to tolerate an ambient temperature range of -4°F (-20°C) up to +131°F (+55°C).
20. The tool must be NFPA 1936; 2010 Edition certified and shall be labelled as such bearing the mark of the testing agency.
21. The tool will not weigh more than 44 lbs (20.5 kg) without the battery or cable plug.

### **Electric-over-hydraulic: Ram**

1. The Rescue Ram is a double-acting hydraulic cylinder. Extension and retraction is carried out hydraulically.
2. Devices do not need to be connected to an external hydraulic source, generation of the required hydraulic pressure takes place within the body of the device by either a quick exchange lithium/ion battery or an external power supply.
3. The tool is equipped with lights to facilitate work under poor lighting conditions.
4. The cylinder of the tool shall be made of anti-corrosive light aluminum alloy for its lightweight, strength and long life. The body of the tool shall have a high impact, non-metallic housing. The housing shall have ventilation holes on both sides of the unit for cooling the motor.
5. The rescue ram is a one-stage cylinder for applying pressure with a constant pressure force along the entire stroke.
6. The ram shall extend to a distance of up to 35 inches (905 mm). The retracted length is to be no less than 21 inches (545 mm).
7. The ram shall feature a single stage stroke. The maximum piston stroke shall be 14 inches (360 mm) producing a compressive force of up to 23,156 lbs (103 kN).
8. For ease of operation and high tensile strength there shall be a limit of one solid steel rod per tool.
9. The tool shall include heat-treated, investment-cast steel ram claw feet on the piston side and on the cylinder side for durable gripping and minimizing slippage.
10. To maximize the capability of the tool the unit should include an optional extension for the rescue cylinder, which may be used to enlarge the effectively possible opening width of an object thus allowing increased versatility. The maximum extended length with the extension accessory increases to 47.2 in (1198 mm).
11. The tool shall have a dual pilot check valve to prevent accidental movement of the piston rod in the event of power loss.
12. The control mechanism shall feature a star-grip control actuator for ease of operation by allowing 360 ° operations in any position. The mechanism shall be separate and independent from the handle to provide added control in close-quarter operation.
13. The tool must provide a non-interflow shear seal “dead man” actuator, whereby the unit stops functioning when thumb pressure is released. The star grip automatically returns to the central position, guaranteeing the full load-holding.
14. The extend piston and retract piston are clearly marked.
15. The tool shall be protected by a pressure relief valve that prevents it from being over pressurized.

16. The tool dimensions without the battery shall not be any longer than 21.3 (542 mm), wider than 5.91 in (150 mm) or higher than 10.4 in (265 mm).
17. The maximum operating pressure to the tool will be 10,200 psi (70 MPa) (700 bar).
18. The nominal electrical voltage (with power supply) is 24 V. The nominal electrical voltage (with lithium/ion battery) is 25.2 V.
19. The tool shall be able to tolerate an ambient temperature range of -4°F (-20°C) up to +131°F (+55°C).
20. The tool must be NFPA 1936; 2010 Edition certified and shall be labelled as such bearing the mark of the testing agency.
21. The tool will not weigh more than 39 lbs (17.7 kg) without the battery or cable plug.